

KS3 Medium Term Plan for Science Route 1 towards AQA Entry level Certificate and GCSE Science

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Autumn	<u>Introduction to Science</u> • Work safely in the science lab • Recognise hazard symbols & know the dangers when handling substances • Identify, name and use correctly different pieces of scientific equipment • Accurately use a variety of measuring instruments • Use a microscope to look at different objects • Identify the different variables in a scientific experiment • Write an experimental method • Use data to draw a bar chart and a line graph <u>The Human Body</u> • List the life processes of living things • Label the different organs that make up the human body and describe the function of each • Describe the simple functions of the basic parts of the digestive system • Identify and name the main parts of the human circulatory system and describe functions of the heart, blood vessels and blood • Describe the ways in which nutrients and water are transported within animals • Identify that humans and other animals have skeletons and muscles for support, protection and movement • Describe the changes as humans develop to old age	<u>Elements and Compounds</u> • Identify and locate the elements in the Periodic Table • Recall the symbols of different elements in the Periodic Table • Describe the properties of metal and non-metal elements • Link the properties of metals and non-metals to their uses • Describe how elements chemically join together to make compounds • Name some simple compounds and know the elements they are made from • Describe the reaction of different metals with water • Describe the reaction of different metals with acid • Use observations to put metals in order of reactivity <u>Electricity</u> • Identify objects that work with mains electricity or with batteries • Construct a simple series circuit, identifying and naming its basic parts, including cells, wires, bulbs, switches and buzzers • Use recognised symbols in a diagram of a simple circuit • Identify whether a lamp will light or not (complete circuits) • Recognise that a switch opens and closes a circuit • Recognise some common conductors and insulators, and associate metals with being good conductors • Describe how current flows in a circuit and use an ammeter to measure the amount of current flowing • Associate the brightness of a lamp or the volume of a buzzer with the number and voltage of cells used in the circuit • Use a voltmeter to measure voltage • Identify & describe the differences between series & parallel circuits

Spring	<u>Earth and Space</u> • Describe the movement of the Earth, and other planets, relative to the sun in the Solar system • Describe the Sun, earth and Moon as approximately spherical bodies • Use the idea of the Earth's rotation to explain day and night and the apparent movement of the sun across the sky • Explain why we have seasons • Describe the movement of the Moon relative to the earth • Explain how gravity holds the planets and the moon in their orbits • Explain what happens during a solar eclipse and a lunar eclipse • Describe what is beyond the Solar System	<u>Chemical Reactions</u> • Identify that dissolving, mixing and changes of state are reversible changes • Identify and explain the difference between chemical and physical reactions • Identify hazard symbols and describe their meaning • Describe what happens during burning and understand the impact it has on the environment (acid rain and global warming) • Use different indicators to identify acids and alkalis • Identify acids and alkalis using the pH Scale • Carry out neutralisation reactions • Describe the uses of neutralisation in our everyday lives
	<u>Properties of Materials</u> • Compare and group materials according to whether they are solid, liquid or gas • Describe the properties of solids, liquids and gases • Draw the particles in solids, liquids and gases and use particle theory to explain properties • Give reasons for the particular uses of everyday materials, including metals, wood and plastic • Observe that some materials change state when heated or cooled and measure the temperature at which this happens • Explain why some materials will dissolve to make a solution and describe how to recover a substance from solution • Use particle theory to explain dissolving • Describe how mixtures can be separated by filtering, sieving and evaporating • Describe how mixtures can be separated by chromatography • Describe how mixtures can be separated by distillation	<u>Interdependence</u> • Describe why there is variation within a species • Describe the adaptations of different organisms • Identify adaptations due to daily and seasonal changes • recognise that environments can change and can sometimes pose dangers to living things • construct and interpret a variety of food chains and identify producers, predators and prey • Interpret a variety of food webs • Recognise that living things have changed over time and fossils provide information about living things that inhabited the earth millions of years ago • Identify how animals and plants are adapted to suit their environment in different ways and may lead to evolution

Summer	<u>Staying Healthy</u> • Identify that animals need the correct types and amounts of nutrition • List examples of foods for proteins, carbohydrates, fats, fibre, vitamins and minerals • Describe the role of different nutrients • Describe the effects of not eating a balanced diet • Identify and name the main parts of the human respiratory system and have a basic understanding of gas exchange • Explain how muscles help us to breathe • Recognise the impact of diet, exercise, smoking, drugs and lifestyle on the way their bodies function	<u>Light and Sound</u> • Recognise that light appears to travel in straight lines • Explain that we see things because light travels from light sources to our eyes or from light sources to objects and then to our eyes • Explain how shadows are formed and how we can change the size of them • Describe what happens to light when it hits a reflective surface and understand the Law of Reflection • Explain why light can bend • Explain how we see different colours and what happens when we use filters • Identify how sounds are made and how they travel • Find patterns between the pitch of a sound and features of the object that produced it • Find patterns between the volume of a sound and the strength of the vibrations that produced it • Describe how the ear detects sounds • Describe how sounds travel through solids, liquids and gases
	<u>Forces and Magnets</u> • Explain that unsupported objects fall towards the Earth because of the force of gravity acting between the Earth and the falling object • Explain the difference between weight and mass • Identify the effects of air resistance, water resistance and friction that act between moving surfaces • Describe the advantages and disadvantages of friction in our lives • Describe the effect of forces acting on springs • Recognise that some mechanisms, including levers, pulleys and gears allow a smaller force to have a greater effect • Describe the effects of balanced and unbalanced forces • Describe magnets as having 2 poles • Observe how magnets attract or repel each other and attract some materials but not others • Use different methods to show the magnetic field around a bar magnet • Draw and explain the magnetic field around a bar magnet • Make an electromagnet and investigate the ways in which the strength of	<u>Plants and Reproduction</u> • Describe how living things are classified into broad groups according to common observable characteristics • Give reasons for classifying plants and animals based on specific characteristics • Identify and describe the functions of different parts of flowering plants • Explore the requirements of plants for life and growth and how they vary from plant to plant • Investigate the way water is transported within plants • Describe how plants carry out photosynthesis

	the magnet is increased • Describe the everyday uses of electromagnets	• Explore the parts that flowers play in the life cycle of flowering plants • Explain how pollination takes place (wind and insect) and state the differences of each • explain how fertilisation in a plant takes place • Describe the ways in which seeds are dispersed • Identify different types of reproduction
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